OAK RIDGE ENHANCED WORK PLANNING

EWP SUCCESS STORY:
EMERGENCY CLEAN-UP OF COLLAPSED WASTE STORAGE TENT

On January 5, 1997 at approximately 2:30 a.m., a large, 1/4 acre tent covering 1300 barrels of radioactive and mixed waste on South Ridge above Y-12 was destroyed by high winds. Initial assessment of the damaged structure showed that two of the four main support beams had fallen rupturing two dozen barrels and spilling their contents. The two remaining beams were still standing but partially connected and threatening to fall onto more barrels.

Corrective actions needed to be taken immediately to stabilize the critical situation. Detailed plans needed to be developed to ensure that spills were contained, the fallen beams were cleared and the partially connected beams would not fall, and that environmental contamination was cleaned up. Work needed to proceed immediately but in accordance with requirements and controls necessary to protect the environment and the health and safety of those involved.

As highlighted below, the incident provided an opportunity for demonstrating many of the fundamental tenets of **enhanced work planning** at Oak Ridge.

EWP TENET: Management Commitment

From the start, management was closely involved with the work activities and committed to a timely, safe, and effective response. The main directive from Dr. Todd Butz , Vice President, Lockheed-Martin Energy Systems, and from all his plant managers was to work the job safely and to minimize any further damage to the remaining waste containers. Management helped remove obstacles by making clear the expectation that the job be planned and executed in a safe and timely manner with the all the necessary organizational groups responding in a coordinated and responsive fashion.

EWP TENETS: Work Scope and Responsibilities Clearly Defined Up-front

After initial inspections by security and the plant shift superintendent's office, Clyde Kelly, Maintenance General Supervisor, was immediately contacted to lead the planning and oversee the response operations. Larry West, rigger planner, was then notified and he and Mr. Kelly met with plant managers in the Emergency Operations Center at 4 a.m. to determine how they would coordinate their efforts to safely stabilize and repair the fallen structure.

The two fallen beams would need to be cleared and the standing (partially connected) beams would need to be stabilized and then carefully removed to assure no additional damage would occur. So that the remaining structure would not collapse, this operation needed to be accomplished the first day. Work needed to be effectively coordinated with environmental personnel who were assigned to assess, contain, and clean-up releases from the drums. This part of the clean-up job would be the greatest challenge to complete safely and in a timely manner.

EWP TENETS: Up-Front, Multi Disciplinary Planning; Worker Involvement; Parallel Review; Job Walkdown; Hazard-based/Graded Planning Approach, Stable Workforce

To accomplish this effort, a planning team was assembled at the site at dawn. The team, consisting of maintenance supervision, planner, ES&H support, and craftspeople, met at the site and jointly walked the job to consider options and arrive at the best plan of attack for each task identified. Emphasis was placed on drawing on the craft skills of the workers involved. Through the joint collaboration of the various disciplines involved, the planning team was able to simultaneously look at all aspects of the job and arrive at an effective, coordinated plan of attack.

Once the first phase of the planning was concluded, a formal lift plan was developed with the participation and parallel approval of the appropriate support groups (e.g., industrial safety, industrial hygiene, environmental, engineering, QA). The initial plan addressed stabilizing in place the two partially connected beams with two large mobile cranes. Then the cables and bolts that were still holding them in place were cut so that the beams could be properly reset. This process required a very coordinated effort between two crane operators, two crews working out of two bucket trucks and the ground crew.

Using the same crew familiar with the process was successfully completed, this same planning approach was then implemented for each additional lift. In all, formal 'critical lift' plans were developed and implemented for each of the four main beams. For the less critical lifts (beam disassembly, section movement and loading) formal plans were not used but craft skill were relied upon consistent with a graded, risk-based approach.

EWP TENET: Measure Performance; Draw from Lessons Learned

Operations went as planned. Planning for the first critical lifting operation (stabilizing and cutting cables) took approximately four hours (as compared to an estimated minimum of two days to plan and get all the approvals for this type of priority critical lift plan per Y-12's normal procedure). Initial tasks (starting with the inspection of the site, through the planning process, to eliminating the risk posed by the two unstable beams) was safely accomplished in 13 hours. The entire clean-up effort including removing the four main structural beams, cutting these into smaller chunks for disposal, removing all the cabling that was holding the tarp in place and removing the tarp material from the site was completed in four days. By most accounts, this four day cleanup using **enhanced work planning** would have taken well over three weeks under Y-12's normal planning process.

ENHANCED WORK PLANNING TENETS

The work as described above incorporated many tenets associated with enhanced work planning.

Management commitment to a safe and effective operation was displayed by Dr. Butz and the plan managers. The project's priority was clearly established and management helped remove obstacles so that the job could run smoothly.

Work was clearly defined up-front by a knowledgeable, committed team who determined the scope and timing of the project along with the resources required .

Roles and responsibilities were clearly defined and accountabilities were commensurate with authorities. A single person was in charge who effectively drew upon the resources at his disposal.

Up-Front, multi disciplinary planning was utilized which relied upon craft involvement, parallel review of plans (not sequential) and on-site job walkdowns.

A hazard-based, graded approach to the work was illustrated when formal lift plans were used for high hazard operations while simply craft skills were relied upon for less critical lifts.

A consistent work crew was utilized such that job familiarity was carried from task to task.

ES&H organizations clearly understood their support role to operations and permits were "driven back" to the ES&H experts such that operations personnel (in this case the facility owners) determined the need for the intervention of the ES&H support groups based on their detailed knowledge of the facility. Operations then worked closely with the support organizations to drive the completion of permits by the subject matter experts and the responsive assignment of support ES&H staff.

Performance was measured and compared to the status quo and lessons learned/feedback were used so that successful operations could be repeated.

For more information about this project or Oak Ridge s EWP program, contact:

Mr. Clyde Kelly, Maintenance General Supervisor, Y-12 Plant **Telephone: (423) 576-6165**

Mr. Ray Smith, Facilities Maintenance Deputy Manager, Y-12 Plant **Telephone: (423) 576-7781**

Mr. Frank Fitzpatrick, EH Technical Assistance Program **Telephone: (423) 483-7800**